University of Minnesota

FACT SHEET

Agricultural Extension Service ● U. S. Department of Agriculture

Handling Drought-Stricken Corn to Prevent Nitrate Poisoning

Animal Husbandry No.8

The Situation

1. Nitrate toxicity is not new. For years it has been known as "Corn-Stalk Poisoning" or "Oat-Hay Poisoning." And not all corn roughage is toxic. Field tests from northeast Iowa in August 1964 showed less than 5 percent of the roughage tested contained nitrate levels that could be potentially toxic to livestock.

2. Forages that contain nitrate levels considered toxic can be safely fed if they are incorporated with other feed and fed sparingly.

3. Many factors govern the degree of toxicity from corn forage. There are variations within a field and between fields. There are variations in the manner the forage was processed. These factors govern the degree of toxicity. Rainfall, thickness of planting, level of fertilization, degree of drought, and portion of the plant consumed also determine the toxicity of the nitrate the roughage may contain.

4. Corn that is affected by drought and that has been heavily fertilized may develop a nitrate build-up following a rain, provided the plant is still alive.

5. The stalk normally contains the most nitrate, the leaves a lesser amount; and the grain is usually void of nitrates.

Symptoms of Nitrate Toxicity in Animals

1. Many of the symptoms of nitrate toxicity may be "hidden" in a subclinical form. This hidden form may be noticed in a decline in milk production in dairy cattle, in animals going off feed, or in poor weight gains of growing and feeding animals.

2. The acute form of this hidden nitrate toxicity may be in abortions, enteritis, rapid breathing, and sudden deaths. Many diseases exhibit these same symptoms. This makes it necessary to have a differential diagnosis from a veterinarian.

Recommendations

1. Harvest the crop regardless of whether it is or is not known to contain nitrates. You will need the forage. Testing and the method of feeding can be determined later.

2. If you need to feed freshly cut (green chop), feed it sparingly. Incorporate other roughage or grain, and observe your animals closely for any signs of nitrate poisoning.

3. Additives such as vitamins or protein are not recommended to be added to the forage during the ensiling process. However, Nebraska researchers showed that 20 pounds of commercial limestone added to a ton of silage decreases the nitrate content.

4. Known safe forages such as first crop hay or silage from the previous year should be fed as the major forage source. When silage known to contain high nitrate levels must be fed, preferably feed it to livestock other than breeding cattle during gestation.

For milk cows start feeding such silage slowly, at $\frac{1}{2}$ pound of silage per 100 pounds of body weight. Observe cattle closely.

If no symptoms (such as drop in milk production) occur after 4 to 5 days, increase the level so that not more than half the forage intake comes from such feed.

5. If forage is ensiled, the nitrate content does not diminish entirely in the fermentation process. Silage aerated in feed bunks for one or two hours will aid in decreasing the gaseous form of nitrate content.

6. Carbohydrates such as corn or barley fed with suspected roughages decrease the toxic potential of the nitrate.

7. When there is a high nitrate concentration in the silage, a high-energy feed -- corn -- helps reduce the toxic effects of the nitrate. However, under these conditions it would generally be advisable to later feed the corn separately along with the silage. This would allow for adjustments in the feeding program, depending upon the quality of the silage and the kind of animals fed. (Corn silage made under drought conditions would probably be slightly higher in feeding value than corn stover silage.)

NOTE: **Many of the symptoms of nitrate toxicity resemble those of other diseases. A veterinarian should be called to differentiate nitrate toxicity from disease. Don't guess!**

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